Algorithm and Data Structure

Practical Work 04 (sub-programs)

Objectives: applying function and procedures for multi purposes problems decomposition.

Exercise 01

Write a procedure (permute) that take as input three integers then permute there values according to their sorting:
e.g: permute(5,7,3) (A=5,B=7,C=3) → (A=3,B=5,C=7)
Complete the whole program in C language in order to finish the task.

Exercise 02

1. Write the following procedures:
   - Read an integer
   - Compute the sum of two integers
   - Compute the sum of all positive integers less or equal a number N (N<=10), where the sum is done two by two in symmetric manner while displaying the operation in each time;
   e.g: for N= 5, the sum ={(1+5)+(2+4)+3}
2. Write the principal code that's call the previous procedures.

Exercise 03

Using function and procedure write a C code to compute the scalar distance between two points p1(x1,y1) and p2 (x2, y2).
// use procedure to read coordinates and function to compute distance and finally a procedure to display the results in well manner.

Exercise 04

Using function write code to compute LCD=(a*b)/GCD(a,b), where a and b present not null integers.

Exercise 05

The integer part of applying square root on a number X is the sum of the first odd numbers; e.g $\sqrt{16}=\sqrt{1+3+5+7}=4$ which is the number of the first odd number. $\sqrt{15} = \sqrt{1+3+5+6}=3$, $\sqrt{25} = \sqrt{1+3+5+7+9} = 5\ldots$etc

Write a function that return the integer part of a square root.
Write a function based on the previous function which verify if an integer is a square number (square root gives exactly an integer); e.g: verify_square(25) gives true, verify_square(15) gives false.
Complete the whole C code from input to display results.